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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/920,268	07/31/2001	Sean Mountcastle	CISCP696	5701
26541	7590	12/28/2005	EXAMINER	
Cindy S. Kaplan P.O. BOX 2448 SARATOGA, CA 95070			ROBERTS, BRIAN S	
			ART UNIT	PAPER NUMBER

2662

DATE MAILED: 12/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/920,268	MOUNTCASTLE, SEAN	
	<b>Examiner</b>	<b>Art Unit</b>	
	Brian Roberts	2662	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,4-6,9-11,14-19,22 and 26-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,9-11,14-19,22 and 26-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

- Applicant's Amendment filed 12/14/2005 is acknowledged.
- Claims 1,6,11,16,18, and 22 have been amended.
- Claims 30 and 31 have been added.
- Claims 2-3, 7-8, 12-13, 20-21 and 23-25 have been cancelled.
- Claims 1, 4-6, 9-11,14-19, 22 and 26-31 remain pending.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4-6, 9-11, 14-15, 22, 26-28 and 30 are rejected under 35 U.S.C (a) as being unpatentable over Hardwick et al. (US 550816) in view of Eilert et al. (US 6587938)

- In reference to claims 1, 6, 11, 30

Hardwick et al. teach a system and method that includes:

- Partitioning a network element that transmits data in a network (e.g. a switch) into a plurality of virtual network elements
- A management system allowing "for a percentage of total heap space to be provisioned as the maximum amount of memory which the VR and its

subcomponents can obtain.” (column 34 lines 19-21) (allocating a portion of the resources of the network element to one of the plurality of virtual network elements);

- “When a VR attempts to allocate an amount of memory which would exceed the maximum allowed, it will be denied.” (column 34 lines 37-39) (permitting the one of the plurality of virtual network elements to utilize only the portion of the resource of the network element that has been allocated to the one of the plurality of virtual network elements)
- A management system for managing:
  - Memory (column 34 lines 7-60)
  - Ports (column 7 lines 36-40).
  - The operations of a first virtual closed user group processor are divided between a first virtual closed user group processor are divided between a first and a second virtual switch. This spreads the processing load between two virtual switches. (column 9 lines 58-61; column 26 lines 36-51) (processor time)
  - Virtual closed user groups where a each virtual closed user group only has access to specific destination identifiers owned by that particular virtual closed user group so that a protocol data unit having a destination identifier which is not owned by the particular virtual closed user group will not be delivered (column 8 line 63 – column 9 line 10) Each virtual closed user group is assigned incoming traffic based on an access policy that is

separately specified in each virtual closed user group (column 29 lines 35-41; Figure 6 206) (bandwidth)

Hardwick et al. does not explicitly disclose managing processor time and reallocating processor time.

Eilert et al. teaches dynamically redistributing various physical resources across logical partitions of a computing environment under direction of one or more workload managers. The physical resources to be redistributed include CPU resources, logical processor resources, I/O resources, coprocessors, channel resources, network adapters and memory resources. (column 5 line 61- column 6 line 55) Eilert et al. further teaches a management system that allows a user to change the allocation of resources between logical partition groups (column 7 line 38 – column 8 line 5) and only utilize the portion of assigned resources.(column 7 lines 10-23)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system and method of Hardwick et al. to include manually managing the resources including processor time, reallocating the resources including processor time, and restricting the partitions to only utilize the assigned resources as taught by Eilert et al. because it would allow the resources including processor time to be distributed to the different virtual network elements according to the initial workload and allow redistributing the resources including processor time according to changes in the workload.

- In reference to claims 4-5, 9-10, 14-15, 27-28

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Hardwick et al. teaches a system and method that covers substantially all limitations of the parent claim. Hardwick et al. teaches partitioning a network element that transmits data in a network (e.g. a switch) into a plurality of virtual network elements (abstract, column 23 lines 14-19) (network element that is used to transmits data is a switch).

- In reference to claims 22 and 26

Hardwick et al. teaches a method that includes:

- Partitioning a network element that transmits data in a network (e.g. a switch) into a plurality of virtual network elements
- A management system allowing “for a percentage of total heap space to be provisioned as the maximum amount of memory which the VR and its subcomponents can obtain.” (column 34 lines 19-21) (allocating a portion of the resources of the network element to one of the plurality of virtual network elements);
- “When a VR attempts to allocate an amount of memory which would exceed the maximum allowed, it will be denied.” (column 34 lines 37-39) (permitting the one of the plurality of virtual network elements to utilize only the portion of the resource of the network element that has been allocated to the one of the plurality of virtual network elements)
- A management system for managing:
  - Memory (column 34 lines 7-60)

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- Ports (column 7 lines 36-40).
- The operations of a first virtual closed user group processor are divided between a first virtual closed user group processor are divided between a first and a second virtual switch. This spreads the processing load between two virtual switches. (column 9 lines 58-61) (processor time)
- Virtual closed user groups where a each virtual closed user group only has access to specific destination identifiers owned by that particular virtual closed user group so that a protocol data unit having a destination identifier which is not owned by the particular virtual closed user group will not be delivered (column 8 line 63 – column 9 line 10) Each virtual closed user group is assigned incoming traffic based on an access policy that is separately specified in each virtual closed user group (column 29 lines 35-41; Figure 6 206) (bandwidth)

Hardwick et al. does not explicitly teach receiving input specifying an application binary then executing the application binary.

Hardwick et al. teaches a method of allocating a portion of available memory, processor time, and data ports to each virtual switch via input through software (column 49 lines 54-67, column 34 lines 7-60, column 24 lines 3-8, column 31 lines 41-43) (receiving input specifying a application binary and executing the application binary).

It would have been obvious to one of ordinary skill in the art at the time of the invention to receive input specifying an application binary and then executing the application to allocate a portion of the resources to a plurality of virtual switches

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because an application binary is software that ensures runtime compatibility, since it defines the machine language, or runtime, format and allows for the partitioning of resources amongst the virtual switches.

Hardwick et al. does not explicitly disclose managing processor time and reallocating processor time.

Eilert et al. teaches dynamically redistributing various physical resources across logical partitions of a computing environment under direction of one or more workload managers. The physical resources to be redistributed include CPU resources, logical processor resources, I/O resources, coprocessors, channel resources, network adapters and memory resources. (column 5 line 61- column 6 line 55) Eilert et al. further teaches a management system that allows a user to change the allocation of resources between logical partition groups (column 7 line 38 – column 8 line 5) and only utilize the portion of assigned resources.(column 7 lines 10-23)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system and method of Hardwick et al. to include managing the resources including processor time, reallocating the resources including processor time, and restricting the partitions to only utilize the assigned resources as taught by Eilert et al. because it would allow the resources including processor time to be distributed to the different virtual network elements according to the initial workload and allow redistributing the resources including processor time according to changes in the workload.



3. Claims 16 and 17 are rejected under 35 U.S.C (a) as being unpatentable over Eilert et al. (US 6587938) in view of Hardwick et al. (US 550816) and further in view of Davison (US6430592).

- In reference to claims 16, 17

Eilert et al. teaches a system and method of managing resources of a computing environment that includes:

- Dynamically distributing or redistributing various physical resources across logical partitions of a computing environment under direction of one or more workload managers. The physical resources to be distributed or redistributed include CPU resources, logical processor resources, I/O resources, coprocessors, channel resources, network adapters and memory resources. (column 5 line 61- column 6 line 55)
- A management system to change the allocation of resources between logical partition groups. (column 7 line 38 – column 8 line 5)
- Limiting the logical partitions to only utilize the resources allocated to the group by the workload manager (column 7 lines 10-23)

Eilert et al. does not teach a virtual network element manager or partitioning a network element into virtual network elements.

Hardwick et al. teaches partitioning a network element that transmits data in a network (e.g. a switch) into a plurality of virtual network elements. (abstract)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system and method of Eilert et al. to include partitioning a

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network element that transmits data in a network (e.g. a switch) into a plurality of virtual network elements as taught by Hardwick because it would allow a physical switch to be partitioned into multiple virtual switches and to allocate/reallocate resources to each of the virtual switches in order to customize them as distinct network elements.

The combination of Eilert et al. and Hardwick et al. does not explicitly teach utilizing a time slicing to allocate processor time.

Davison teaches the concept of allocating processor time to multiple users utilizing time slices. (abstract; column 4 lines 30 – column 5 line 16)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system and method of the combination of Eilert et al. and Hardwick et al. to include utilizing time slices to share CPU time amongst multiple groups as taught by Davison because it would allow the multiple partitions to each utilize an assigned portion of the total processing time of a CPU.

4. Claims 18, 19, and 31 are rejected under 35 U.S.C (a) as being unpatentable over Hardwick et al. (US 550816) in view of Eilert et al. (US 6587938) and further in view of Davison (US6430592).

- In reference to claims 18,19

Hardwick et al. teach a system and method that includes:

- Partitioning a network element that transmits data in a network (e.g. a switch) into a plurality of virtual network elements

- A management system allowing “for a percentage of total heap space to be provisioned as the maximum amount of memory which the VR and its subcomponents can obtain.” (column 34 lines 19-21) (allocating a portion of the resources of the network element to one of the plurality of virtual network elements);
- “When a VR attempts to allocate an amount of memory which would exceed the maximum allowed, it will be denied.” (column 34 lines 37-39) (permitting the one of the plurality of virtual network elements to utilize only the portion of the resource of the network element that has been allocated to the one of the plurality of virtual network elements)
- A management system for managing:
  - Memory (column 34 lines 7-60)
  - Ports (column 7 lines 36-40).
  - The operations of a first virtual closed user group processor are divided between a first virtual closed user group processor are divided between a first and a second virtual switch. This spreads the processing load between two virtual switches. (column 9 lines 58-61; column 26 lines 36-51) (processor time)
  - Virtual closed user groups where a each virtual closed user group only has access to specific destination identifiers owned by that particular virtual closed user group so that a protocol data unit having a destination identifier which is not owned by the particular virtual closed user group will

not be delivered (column 8 line 63 – column 9 line 10) Each virtual closed user group is assigned incoming traffic based on an access policy that is separately specified in each virtual closed user group (column 29 lines 35-41; Figure 6 206) (bandwidth)

Hardwick et al. does not explicitly disclose managing processor time and reallocating processor time.

Eilert et al. teaches dynamically redistributing various physical resources across logical partitions of a computing environment under direction of one or more workload managers. The physical resources to be redistributed include CPU resources, logical processor resources, I/O resources, coprocessors, channel resources, network adapters and memory resources. (column 5 line 61- column 6 line 55) Eilert et al. further teaches a management system that allows a user to change the allocation of resources between logical partition groups (column 7 line 38 – column 8 line 5) and only utilize the portion of assigned resources.(column 7 lines 10-23)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system and method of Hardwick et al. to include managing the resources including processor time, reallocating the resources including processor time, and restricting the partitions to only utilize the assigned resources as taught by Eilert et al. because it would allow the resources including processor time to be distributed to the different virtual network elements according to the initial workload and allow redistributing the resources including processor time according to changes in the workload.

The combination of Hardwick et al. and Eilert et al. does not explicitly teach utilizing a time slicing to allocate processor time.

Davison teaches the concept of allocating processor time to multiple users utilizing time slices. (abstract; column 4 lines 30 – column 5 line 16)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system and method of the combination of Hardwick et al. and Eilert et al. to include utilizing time slices to share CPU time amongst multiple groups as taught by Davison because it would allow the multiple partitions to each utilize an assigned portion of the total processing time of a CPU.

- In reference to claim 31

The combination of Hardwick et al. and Eilert et al. teaches a system and method that covers substantially all limitations of the parent claim.

The combination of Hardwick et al. and Eilert et al. does not explicitly teach utilizing a time slicing technique to manage the processor time.

Davison teaches the concept of allocating processor time to multiple users utilizing time slices. (abstract; column 4 lines 30 – column 5 line 16)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system and method of the combination of Hardwick et al. and Eilert et al. to include utilizing time slices to share CPU time amongst multiple groups as taught by Davison et al. because it would allow the multiple partitions to each utilize an assigned portion of the total processing time of a CPU.

5. Claims 29 are rejected under 35 U.S.C (a) as being unpatentable over Hardwick et al. (US 550816) in view of Eilert et al. (US 6587938), as applied to the parent claim, and further in view of Jagannathan (US 6763192).

- In reference to claim 29

The combination of Hardwick et al. and Eilert et al. teaches a system and method that covers substantially all limitations of the parent claim. Hardwick et al. further teaches a management apparatus (164) can reassign (update) the data ports between virtual switching devices (column 24 lines 3-8)

The combination of Hardwick et al. and Eilert et al. does not explicitly teach querying the virtual network manager for available ports.

In Figure 6, Jagannathan teaches a network manger requesting a port and a resource management mechanism querying a port availability database to determine the available ports.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the port reassignment system and method of the combination of Hardwick et al. and Eilert et al. to include a network manager requesting a resource management mechanism to query a port availability database as taught by Jagannathan prior to a network manager reassigning the data ports between virtual switching devices because querying a database that can store a list of the unassigned ports and a list of assigned ports with each virtual switching device would allow a

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network manager to further customize each virtual switching device as a distinct network element.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1, 4-6, 9-11, 14-19, 22 and 26-31 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure are:

- Bean et al. (US 4843541) teaches logical resource partitioning of a data processing system.
- Matsuura (US 5530860) teaches a virtual computer control system effectively using a CPU with predetermined assignment ratios of resources based on a first and second priority mechanism.
- Baker-Harvey (US 6385638) teaches a processor resource distributor and method.
- Harris et al. (US 6438704) teaches a system and method for scheduling the use of system resources amongst a plurality of limited users.
- Armstrong et al. (US 20020156824) teaches a method and apparatus for allocating processor resources in a logically partitioned computer system.

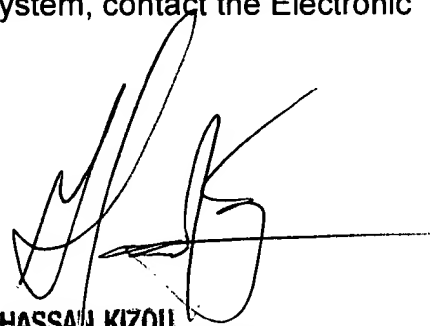
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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Roberts whose telephone number is (571) 272-3095. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BSR  
12/23/2005

A handwritten signature in black ink, appearing to read 'H. Kizou', is written over a horizontal line.

**HASSAN KIZOU**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**